VARIABLE VALVE TIMING STRUCTURE FOR OUTBOARD MOTOR ENGINE

ABSTRACT

An internal combustion engine for an outboard motor that comprises at least one combustion chamber formed by at least a engine body, a cylinder head assembly and a piston that moves relative to the engine body and the cylinder head assembly. A crankshaft extends in a generally vertical direction and is coupled to the piston such that movement of the piston causes the crankshaft to rotate. A port is in communication with the combustion chamber. A valve is moveable between open and closed positions of the port. A camshaft is journaled for rotation and extends generally parallel to the crankshaft. The camshaft includes at least one cam configured to open and close the valve. A rotor is attached an upper end of the camshaft and is positioned for at least partial rotation within a housing. The rotor defines at least a first space and a second space within said housing. A driven member is coupled to the housing. A drive member is coupled to an upper end of the output shaft. The drive member is coupled to the driven member such that rotation of the drive member is transmitted to the driven member. A control valve is positioned within a common hydraulic passage having a first opening and a second opening. A first hydraulic passage is in communication with the first space and the first opening and a second hydraulic passage in communication with the second space and second opening. The control valve is configured to selectively open and close the first and second openings such that hydraulic fluid is preferentially supplied to either the first space or the second space. The control valve is positioned generally along an axis that is perpendicular to the camshaft.